

## REMARKS

This is intended as a full and complete response to the Office Action dated November 1, 2007, having a shortened statutory period for response set to expire on February 1, 2008. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1, 4-9, and 33-43 remain pending in the application after entry of this response. Claims 2, 3, 10-15, and 17-32 have been canceled without prejudice. Claims 1 and 5-9 have been amended and new claims 33-43 have been added. No new matter has been added by either the amendments or new claims.

Claims 10-15 and 17-32 stand withdrawn by the Examiner. Claims 1-9 are rejected by the Examiner.

### Election/Restrictions

The Examiner has restricted the claims as follows: Group I, claim(s) 1-9, drawn to method of pumping wellbore liquid. Group II, claim(s) 10-15, drawn to electrical submersible pump. Group III, claim(s) 17-25 and 30-32, drawn to motor having rotor and stator. Group IV, claim(s) 26-29, drawn to permanent magnet motor with carrier sleeve and retention sleeve.

Applicant affirms the provisional election of Group I, without traverse.

### Claim Objections

Claim 6 is objected to because of the following informalities: in claim 6, one of the periods after the six should be omitted. Claim 6 has been amended to overcome the objection. Withdrawal of the objection is respectfully requested.

### Claim Rejections Under 35 U.S.C. § 112

Claims 7-9 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 7-9 have been amended to overcome the rejection. Withdrawal of the rejection is respectfully requested.

### Claim Rejections Under 35 U.S.C. § 103

Claims 1-9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Buchanan* (U.S. Publication No. 20020066568) in view of *Eno* (U.S. Patent No. 5,923,111). As the rejection of claim 3 may now apply to amended claim 1, Applicant respectfully traverses.

The Examiner cites paragraph [0054] of *Buchanan* which mentions the possibility of a permanent magnet synchronous motor being used instead of the AC induction motor of the embodiment of Figure 11. Furthermore paragraphs [0056] to [0058] describe a further embodiment with reference to Figures 12-14 utilizing a permanent magnet synchronous motor. However, there is no mention in *Buchanan* of operating the pump at high speed, that is at more than 4,500 rpm, so as to ensure that a greater torque can be provided for a given motor size (due to the power output being proportional to the cube of the rotational speed). This is not surprising since *Buchanan* contemplates an integrated system comprising a plurality of pump stages, each of which comprises an impeller section, a motor section, and a diffuser section, and which can cooperate to lift the wellbore liquid and thus provide significantly more power than if a single pump stage was used. The ability to use a number of pump stages coupled together to increase the overall pump power would therefore render it unnecessary to seek any other way of increasing the pump power.

The Examiner cites *Eno* as teaching that "permanent magnet motors can operate efficiently at higher rpms which allows smaller pumps to be manufactured to be installed in a well" and has referred to col. 1, lines 25-35 in this regard. However, the passage in question clearly refers to the use of induction type motors and no mention is made in *Eno* of operation of a synchronous permanent magnet motor at high speed, that is, at more than 4,500 rpm. *Eno* refers to the use of such a motor in a submersible centrifugal pump for operating submerged in water, and the modular instruction of the motor enables the power output to be varied to suit the particular application of the pump (col. 5, lines 41-50). Because the power output can be increased by increasing

the number of modules in the motor, there is no incentive to increase the power output by operating the motor at high speed.

Because there is no incentive in either *Buchanan* or *Eno* to operate a synchronous permanent magnet motor at high speed, it is believed that the Examiner is incorrect in contending that it would be obvious to one of ordinary skill "to modify the method disclosed by *Buchanan* to operate the pump at 7000-7500 rpm". The only operating speeds of this order mentioned in either reference are those referred to in *Eno* in relation to operation of "an induction type motor", and, as is made clear in *Eno*, an induction type motor is different to a synchronous permanent magnet motor, and suffers from the disadvantage that its efficiency drops at such high speeds.

Therefore, there is no motivation to combine *Buchanan* and *Eno*. Withdrawal of the rejection is respectfully requested.

#### Conclusion

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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